REMARKS

Prior to this amendment the claims of elected group VI, claims 21, 55-60, 69 and 74-75 were pending. Claim 21 has been amended herein, claims 55, 69 and 74-75 have been canceled and new claims 104-110 have been added. Therefore, claims 21, 56-60 and 104-110 are currently pending.

The specification has been amended to import -CHOH-NH- from the claims as filed. This modified peptide bond, -CHOH-NH has been imported into the list of such modifications at page 6 without adding new matter.

The invention

Applicants have discovered that new modified peptides that have a peptide bond replaced by certain non-peptide linkages are active and useful in a variety of applications, such as for instance, as enzyme inhibitors or as vaccine components. The presently claimed invention relates to modified peptides of the AIDS virus, including NEF 84-92 and GAG77-85 and vaccine components thereof.

Amendments to the claims

Claim 21 has been amended to exclude elements of the invention which are outside the scope of the elected subject matter of the elected claims of group VI.

New vaccine claims 104-110 have been added to cover vaccine formulations comprising the peptide analogue compositions of claims 21 and 56-60.

The Office Action of July 15, 2002

The Examiner stated that the oath/declaration is defective. According to the Examiner, non-initialed and/or non-dated alterations have been made in the addresses of the second, fifth and seventh inventors.

A new Declaration and power of attorney specifying the correct addresses of the inventors is submitted herewith.

Applicants thank the Examiner for pointing out that the WO95/24916 published patent application is in the French language, but has an abstract in English. Further, according to 37 C.F.R. 1.98(a)(3) an Information Disclosure containing a patent reference in a foreign language must include a concise explanation of its relevance as presently understood by the individual designated under 37 C.F.R. 1.56(c). Since the abstract is such a concise explanation as understood by Applicants' attorney, the Information Disclosure Statement submitted December 17, 1999 is in full compliance with 37 C.F.R. 1.98(a)(3).

At page 3 of the office action of July 15, 2002, the Examiner stated that new formal drawings are required and that this requirement would not be held in abeyance. New formal drawing are submitted herewith.

Rejections under 37 C.F.R. 112 second paragraph

At paragraph 8, on page 4 of the office action, claims 21, 55-60 and 74-75 were rejected as allegedly failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention.

In particular, claims 21 and 55-60 were rejected as allegedly indefinite in the recitation of non-elected subject matter specifically recited in claim 21.

Likewise, claims 69 and 74-75 were rejected as allegedly indefinite in the recitation of non-elected subject matter specifically recited in claim 21.

Applicants have amended claim 21 to recite: "A peptide analogue of a parent peptide, wherein the parent peptide is a peptide of the AIDS virus (Human immunodeficiency Virus Type I, HIV1),..."

Therefore, claim 21 and all the pending dependent claims, 56-60 have been limited to the elected subject matter of group VI relating to modified peptides of the AIDS virus, including NEF 84-92 and GAG77-85 and vaccine components thereof.

Similarly, new claims 104-110 relate to vaccine compositions comprising modified peptides of the AIDS virus.

Therefore, claim 104 and dependent claims 105-110 are limited to vaccine compositions according to the elected subject matter of group VI claims.

Therefore, Applicants respectfully request that the rejection under 37 C.F.R. 112 second paragraph be withdrawn.

Rejections under 37 C.F.R. 112 first paragraph

In the Office action of July 15, 2002 the Examiner rejected claims 21, 55-60 and 74-75 for allegedly not being enabled by the specification. According to the Examiner, because the list of peptide bond replacements at page 6 of the specification does not include the -CHOH-NH- bond replacement, the skilled artisan would require further guidance or undue experimentation to predict which peptide would act as an agonist for the parent peptide.

Applicants respectfully point out that contrary to the Examiner's assertion of a lack of disclosure of a -CHOH-NH- replacement of a peptide bond in the specification, in fact the specification at page 12 and in claim 9 as filed, each disclose eight separate instances of a -CHOH-NH- replacement of a peptide bond in a NEF peptide.

Further, the Examiner goes on to assert that the post-filing art of Benkirane et al. demonstrates that immune recognition of a modified peptide varies with the placement of a peptide bond replacement with the -CH_2-NH- group in the parent peptide. Therefore, according to the Examiner, it would require undue experimentation to predict which peptide bond replacement would maintain the agonist activity of the parent peptide, or maintain the effectiveness of the modified peptide in a vaccine composition.

First and foremost, the Benkirane et al. publication is not relevant to the presently claimed invention. The disclosure of Benkirane et al. relates to the requirements of peptidomimetic compositions for antibody recognition. By contrast, the present claims are directed to peptide analogs of a parent peptide, wherein the parent peptide interacts with molecules of the MHC in the context of a pathological condition involving a cell mediated immune response in an animal. Thus, the activities of the peptidomimetic compositions reported by Benkirane et al. are completely different from those required by the present claims.

Furthermore, even if the Benkirane et al. reference is considered, and even if its disclosure is cited to support the Examiner's argument that "the position of said replacement -CH_2-NH- bond causes a variation in the immune response," this assertion does not support a rejection under 35 U.S.C. §112, first paragraph for lack of enablement. As cited by the Examiner and as stated in the Benkirane et al. reference, the different positioning of the CH_2-HN- bond causes a variation of the measured binding activity, not a lack of the measured activity. A variation in activity is not a lack of activity. Again, the Benkirane et al. reference fails to support the rejection for alleged lack of enablement.

At page 5 of the Office Action, the Examiner stated that the instant specification lacks *in vivo* working examples of vaccine compositions comprising a peptide analog, including the recited GAG and NEF peptide analogs. Further, the Examiner stated that in view of the lack of enablement *in vitro,* the claims were not enabled.

Applicants maintain that the skilled artisan reading the present specification would have more than a reasonable expectation of success in making and using the claimed peptides. For this reason, Applicants maintain that they have fully complied with the requirements of section 112.

It is the Examiner's burden to show that one of ordinary skill in the relevant art having access to the present specification would have to engage in undue experimentation to be enabled to make or use the invention. This the Examiner has not done.

Therefore, Applicants respectfully request that this rejection under 35 U.S.C. §112, first paragraph be withdrawn.

Applicants respectfully request reconsideration of the objections and the rejections issued in the Office Action of July 15, 2002. If any further issues remain to be resolved the Examiner is invited to contact applicants' attorney at the telephone number indicated below.

Respectfully submitted,

Algis Anilionis

Algis Anilionis, Ph.D.
Registration No.: 36,995
Attorney for Applicant(s)

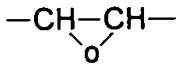
HOFFMANN & BARON, LLP
6900 Jericho Turnpike
Syosset, New York 11791
(516) 822-3550

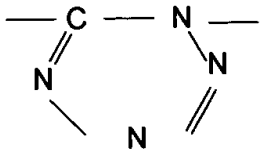
EDITED VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

At page 6, please delete the last paragraph extending to page 7 and replace with the following:

-- More particularly, the invention relates to the peptide analogues as described above, characterized in that at least one of the peptide bonds -CO-NH- in the peptide chain of the parent peptide is replaced with a bond other than the -CO-NH- bond, the said other bond being chosen in particular from the following:

-CHOH-NH-	**(hydroxymethyleneamino)**
$-CH_2-NH-$	(methyleneamino)
$-CH_2-CH_2-$	(carba)
$-CO-CH_2-$	(ketomethylene)
$-CH_2-O-$	(methyleneoxy)
$-CHOH-CH_2-$	(hydroxyethylene)
-CHOH-CHOH-	(dihydroxyethylene)
-CH=CH-	(E or Z olefin)
-CHCN-NH-	(cyanomethyleneamino)
$-S-CH_2-$	(thiomethylene)
$-CH_2-S-$	(methylenethio)
-CS-NH-	(thioamide)
$-PO_2-NH-$	(phosphonamide)
-CHOH-	(hydroxymethylene)
-NH-CO-NH-	(urea)
	(oxirane)



(tetrazole)

$-CH_2-CO-NH-$ (β-homologation)

$-CHOH-CH_2-NH-$ (hydroxyethyleneamino)

-CO-NH-NH- (hydrazino) - -

In the Claims

Please amend claim 21, cancel claims 55, 69 and 74-75; and add new claims 104-110 as follows:

21. (Amended) A peptide analogue of a parent peptide, wherein the parent peptide is a peptide of the AIDS virus (Human immunodeficiency Virus Type I, HIV1), said parent peptide being derived from an exogenous protein or an endogenous protein, wherein said parent peptide interacts with molecules of the MHC in the context of a pathological condition involving a cell mediated immune response in an animal, wherein:

(a) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified, and wherein the modifications do not comprise a retro type modification or a retro-inverso type modification; or

(b) at least one amino acid of the parent peptide chain is substituted with a non-protein-generating amino acid; or

(c) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified and at least one amino acid of said parent peptide chain is substituted with a non-protein-generating amino acid.

56. (Amended) The peptide analogue according to claim [55] 21, wherein the parent peptide is the peptide NEF 84-92 or the peptide GAG 77-85.

104. (New) A vaccine composition comprising a peptide analogue of a parent peptide according to claim 21.

105. (New) The vaccine composition of claim 104, wherein the parent peptide of the human immunodeficiency virus, HIV1 or HIV2 comprises a NEF or GAG sequence.

106. (New) The vaccine composition according to claim 105, wherein the parent peptide is the peptide NEF 84-92 or the peptide GAG 77-85.

107. (New) The vaccine composition according to claim 104, wherein at least one of the peptide bonds (–CO-NH-) of the parent peptide is modified, with the exception of modifications of the retro or retro-inverso type.

108. (New) The vaccine composition according to claim 105, wherein said peptide analogue is an analogue of NEF84-92 selected from the group consisting of the peptides NEFRD1-8 as follows:

NEFRD1	AΨ(CH_2-NH)VDLSHFLK
NEFRD2	AVΨ(CH_2-NH)DLSHFLK
NEFRD3	AVDΨ(CH_2-NH)LSHFLK
NEFRD4	AVDLΨ(CH_2-NH)SHFLK
NEFRD5	AVDLSΨ(CH_2-NH)HFLK
NEFRD6	AVDLSHΨ(CH_2-NH)FLK
NEFRD7	AVDLSHFΨ(CH_2-NH)LK
NEFRD8	AVDLSHFLΨ(CH_2-NH)K.

109. (New) The vaccine composition according to claim 105, wherein said peptide analogue is an analogue of NEF84-92 selected from the group consisting of the peptides NEFHEA1-8 as follows:

NEFHEA1	AΨ(CHOH-NH)VDLSHFLK
0NEFHEA2	AVΨ(CHOH-NH)DLSHFLK
NEFHEA3	AVDΨ(CHOH-NH)LSHFLK

NEFHEA4	AVDLΨ(CHOH-NH)SHFLK
NEFHEA5	AVDLSΨ(CHOH-NH)HFLK
NEFHEA6	AVDLSHΨ(CHOH-NH)FLK
NEFHEA7	AVDLSHFΨ(CHOH-NH)LK
NEFHEA8	AVDLSHFLΨ(CHOH-NH)K.

110. (New) The vaccine composition according to claim 105, wherein said peptide analogue is an analogue of GAG 77-85 selected from the group consisting of the peptides GAGRD1-8 as follows:

GAGRD1	SΨ(CH_2-NH)LYNTVATL
GAGRD2	SLΨ(CH_2-NH)YNTVATL
GAGRD3	SLYΨ(CH_2-NH)NTVATL
GAGRD4	SLYNΨ(CH_2-NH)TVATL
GAGRD5	SLYNTΨ(CH_2-NH)VATL
GAGRD6	SLYNTVΨ(CH_2-NH)ATL
GAGRD7	SLYNTVAΨ(CH_2-NH)TL
GAGRD8	SLYNTVATΨ(CH_2-NH)L.